

Dietary and Medical Risk Factors for Sporadic *Listeria monocytogenes* Infection: A FoodNet Case-Control Study – United States, 2000-2003

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Background *Listeria monocytogenes* (LM) is an important cause of foodborne illness and death, causing over 2500 illnesses and 500 deaths annually in the U.S. Outbreaks have been caused by ready-to-eat foods, hot dogs, deli meats, and dairy products. Risk factors for sporadic infection are not well understood.

Methods The Foodborne Diseases Active Surveillance Network (FoodNet) conducts surveillance for culture-confirmed LM infections at clinical laboratories in nine states. After excluding outbreak-associated cases, we attempted to enroll all remaining LM cases in a case-control study during a 36-month period from 2000-2003. A case was defined as culture-confirmed LM infection in a resident of the catchment area. Controls were recruited through healthcare providers and matched to cases by state, age group, and immune-suppression status. Data were collected about exposures occurring in the 4 weeks before specimen collection. Analysis of single exposures included adjustment for matching factors.

Results FoodNet ascertained 254 LM cases. Twenty cases, linked to an outbreak caused by deli turkey meat, were excluded. Of the 234 eligible cases, 174 (74%) were enrolled. The median age was 67 years. Twenty-four (14%) patients died. Of 96 female patients, 27 (28%) were pregnant; 7 (26%) suffered a spontaneous abortion or fetal demise. We enrolled 378 controls. In preliminary univariate analysis, pre-existing medical conditions associated with LM infection included liver disease (adjusted odds ratio [OR] 3.7; 95% Confidence Interval [CI], 1.8-7.5), and use of a gastric-acid reducing medication (OR 1.7; CI, 1.1-2.5). Dietary factors associated with LM infection included eating hummus (OR 4.9; CI, 1.7-14.1), Camembert cheese (OR 3.5; CI, 1.1-11.3), or sorbet (OR 1.6; CI, 1.0-2.5).

Conclusions Infection with LM caused high rates of fetal demise and of death in infected persons. Sporadic LM infection was associated with consumption of both recognized (Camembert cheese) and previously unrecognized (hummus and sorbet) vehicles; these associations require further study.